

the printed board 2 and the upper casing 3 and between the printed board 2 and the lower casing 4.

Also, the printing board 2 is in cantilever support condition as being supported on one end portion in the longitudinal direction of the printed board 2 (but is supported with wide contact surface) in the shown embodiment. However, it is also possible to support the elastic member 5 at both ends in the longitudinal direction.

Next, the second embodiment of the present invention will be discussed with reference to Fig. 2.

As shown in Fig. 2, the elastic members 5 are arranged in the vicinity of the CSP 6 mounted on the printed board 2 and are bonded at a plurality of positioned on the printed board 2. Among a plurality of elastic members 5, part of the elastic members 5 are arranged on both end portions in the longitudinal direction of the printed board 2. The other part of the elastic members 5 are arranged in extension along the outer edge portion of the substantially quadrangular shaped CSPs 6.

In the embodiment shown in Fig. 2, a ratio of total contact area of a plurality of (five in the embodiment shown in Fig. 2) of elastic members 5 provided on the surface 2a and the surface 2a versus the area of the surface 2a on the side of the printed board where the CSPs 6 are mounted, is about 7.5%. It is also desirable to bond a plurality of elastic members 6 even on the back surface of the surface 2a of the printed

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board 2. In view of stress distribution or impact absorption, it is desirable to bond the elastic members 5 on back sides of the printed board in a ratio of area greater than or equal to 5%. Furthermore, the elastic members 5 provided at a plurality of positions on both of the surface and back sides of the printed board 2 can be provided at corresponding positions of the surface side and the back side, respectively. In the alternative, it is also possible to provide the elastic members 5 at mutually offset positions on the surface side and the back side of the printed board 2.

In the shown embodiment of the portable information radio terminal device 1, by holding the printed board 2 assembled in the device body 1 with the elastic members 5 of impact absorbing material, it can prevent solder balls of the CSPs and the like mounted on the printed board 2 from breaking or peeling due to vibration or deflection of the printed board 2 in response to exertion of the impact by falling down or other reason.

In particularly, in the embodiment shown in Figs. 1A and 1B, the printed board 21 assembled in the portable information radio terminal device 1 is held by the elastic member 5, such as impact absorbing material, disposed between the upper casing 3 and the lower casing 4. By this, the stress to be exerted upon receiving impact due to falling down or so forth, will not be concentrated to the one fixed point and be distributed

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to prevent the printed board 2 from causing significant vibration or deflection. Furthermore, as shown in Fig. 2, the effect can be further enhanced by bonding the elastic members 5 to a plurality of portions.

5           It should be noted that while the shown embodiments take constructions to support the printed board 2 by the elastic member or members 5 disposed between the upper casing and the printed board 2 and/or between the lower casing and the printed board 2, the present invention should not be limited to a  
10 construction where the printed board 2 is supported only by the elastic member or members 5. When an external force, such as impact upon falling down or the like, is exerted on the portable information radio terminal device 1, the printed board 2 is supported at a plurality of positions or with a relatively  
15 large area or at a displaceable point so as to distribute the stress to a plurality of positions or to a wide region in order to avoid stress concentration to one position. Therefore, stress can be distributed.

          With the embodiments set forth above, one effect is to  
20 solve the problem of breakage or peeling off of the CSPs mounted on the board. Therefore, influence of falling down impact of the portable telephone can be reduced. The reason is that, by holding the printed board with the elastic member without using screw, a portion supporting the printed board becomes wider  
25 to avoid concentration of the stress upon exertion of impact,

such as falling down, to prevent vibration or deflection of the printed board.

It should be noted that what is supported by the elastic member is not limited to the printed board but can be various  
5 boards mounting the electronic parts or can be the electronic part per se.

With the portable information radio terminal device according to the present invention, electrical connection of the electronic parts mounted on the board in the device body  
10 can be maintained even upon exertion of impact (external force) due to falling down of the portable information radio terminal device to minimize possibility of occurrence of failure of the electronic parts.

Although the present invention has been illustrated and  
15 described with respect to exemplary embodiments thereof, it should be understood by those skilled in the art that the foregoing and various changes, emission and additions may be made therein and thereto, without departing from the spirit and scope of the present invention. Therefore, the present  
20 invention should not be understood as limited to the specific embodiment set out above but to include all possible embodiments which can be embodied within a scope encompassed and equivalent thereof with respect to the feature set out in the appended claims.

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1. A portable information radio terminal device comprising:

- a device body;
- an electronic part provided in said device body; and
- an elastic member supporting said electronic part within  
said device body.

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2. A portable information radio terminal device comprising:

- a device body;
- a printed board provided in said device body;
- an electronic part provided on said printed board; and
- an elastic member supporting said printed board within said device body.

15 3. A portable information radio terminal device as set forth  
in claim 2, wherein said device body includes a first and second  
casing to be assembled with each other, and said elastic member  
is disposed between said printed board and said first casing  
and between said printed board and said second casing.

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4. A portable information radio terminal device as set forth in claim 3, wherein a direction of an elastic force acting on said printed board from said elastic member disposed between said printed board and said first casing and a direction of an elastic force acting on said printed board from said elastic

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9. A manufacturing method of a portable information radio terminal device for assembling a first casing and a second casing, and housing a printing board between said fir and second casing, comprising:

5 a step of arranging said printed board on one of said first and second casings via an elastic member; and

a step of assembling the other of said first and second casings to said one of said first and second casing with interpositioning said elastic member between said the other

10 of said first and second casings and said printed board.

10. A manufacturing method of a portable information radio terminal device as set forth in claim 9, wherein said first and second casings are assembled with pressurizing said elastic

15 member.

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